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Computation by Electronic

Analogue Computers

By I. V. Borsky and J. Matyas

A comprehensive review of the state of the art plus original work on the use of the analogue computer in solving problems in science and engineering. The book also contains a matrix programming method.

Contents: Introduction. Function of Electronic Analogue Computers. General Programming Diagrams. Detailed Programming Diagrams. Linear Problems. Nonlinear Problems. Simulation of Physical Systems. Special Problems. Organization of Computing Works. Examples of Problems Solved on Analogue Computer. Appendices.

421 pages, 350 illus.

1968

\$10.75

Analogue and Hybrid Computers

By Z. Nenadal

University of Prague

B. Mirtes

Analogue and Hybrid Computer Department,
Research Institute of Mathematical Machines, Prague

Translated from the Czech by R. J. M. Grew

This comprehensive text on operational amplifiers, the heart of the computer, deals with the most recent transistor techniques. It discusses the latest information on digital logic and combined analogue-digital techniques together with design aspects, accuracy, and programming methods.

Contents: Introduction. Operational Amplifiers. Passive and a.c. Computing Elements. Electromechanical, Servomechanical and Mechanical Computing Elements. Electronic Nonlinear Circuits, Digital and Hybrid Elements, Analogue Computer Programming, Auxiliary Circuits and Apparatus. Analogue and Hybrid Computers.

628 pages, 446 illustrations.

1968

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Mathematical Linguistics and Computer Science



WINTER • 1968 - 1969

Readings in Automatic Language Processing

Edited by David G. Hays

State University of New York, Buffalo, N.Y.

Collection of papers summarizing in various ways, methods, solutions to central problems, or approaches to the use of the computer as a processor of natural language. *Mathematical Linguistics and Automatic Language Processing, 1.*

Contents: Introduction. Specification Languages for Mechanical Languages and their Processors—A Baker's Dozen. Natural Language in Computer Form. A High-Speed Large-Capacity Dictionary System. Parsing. The Predictive Analyzer. Connectability Calculations, Syntactic Functions, and Russian Syntax. The Grammar of Specifiers. Research Methodology for Machine Translation. On the Mechanization of Syntactic Analysis. Keyword-in-Context Index for Technical Literature. Automatic Phrase Matching. A Framework for Syntactic Translation. Index.

207 pages 1966 \$10.00

Introduction to Computational Linguistics

By David G. Hays

State University of New York, Buffalo, N.Y.

Describes automatic language processing and supplies programming techniques. A valuable learning tool for students, linguists, and computer specialists. *Mathematical Linguistics and Automatic Language Processing, 2.*

Contents: Indexes. Preface. List of Figures. Computers and algorithms. Storage structures. External storage. Acquisition, storage, and presentation of textual data. Dictionary lookup. Parsing strategies. Techniques for storing and using grammars. Context-sensitive and transformational parsing. Stratal conversion. Concordances. Techniques for linguistic research. Documentation. Automatic translation. List of computer instructions. Index.

245 pages 1967 \$9.75

(Available in the United Kingdom through Macdonald & Co.)

Mathematical Linguistics in Eastern Europe

By Ferenc Kiefer

Computing Center, Hungarian Academy of Sciences

Describes mathematical theories being developed in the Soviet Union and other Eastern European countries as models for the structure of natural language. Numerous contributions are summarized giving technical detail and applicability. *Mathematical Linguistics and Automatic Language Processing, 3.*

Contents: Introduction. Kulagina's set-theoretic model. Saumjan's generative model. Semantics. Transformational grammar. Dependency and projective grammars. Conclusion. Bibliography. Index.

188 pages 1968 \$12.50

A Comparative Quantitative Phonology of Russian, Czech, and German

By Henry Kucera

Dept. of Languages, Brown University

George K. Monroe

Dept. of Languages, Lafayette College

Describes the procedures and results of a quantitative comparison of syllabic structures and of phonemic constraints operative within the phonological syllable in three languages, Russian, Czech and German. *Mathematical Linguistics and Automatic Language Processing, 4.*

Contents: Preface. Introduction. Automatic Phonemic Transcription of the Data. Phonological Analysis—Segmental Phonemes. The Phonological Syllable. Communicational Analysis of the Syllable. Phonemic Isotopy and Language Divergence. Syllable Sequences. Conclusion. Bibliography.

124 pages 1968 \$12.00

Information in the Language Sciences

Edited by Robert R. Freeman, Alfred Pietrzyk, and A. Hood Roberts

Conference on Information in the Language Sciences, Warrenton, Virginia, 1966, sponsored by the Center for Applied Linguistics. *Mathematical Linguistics and Automatic Language Processing, 5.*

Contents: General Trends: Information Explosion. New Program for the International Federation for Documentation. On trends in Information and Language Sciences. Information needs of language sciences: Information Flow in Linguistics. What is Linguistic Information? Cross Disciplinary Needs for a Clearinghouse of Language Sciences. Suggestions on Scope of Linguistic Documentation. Questions on Information Problems in Linguistics. Essay on Profession of Linguistics as a Customer for Automatic Documentation. System Design: Major Contemporary Topics in Documentation. Some Reciprocal Requirements of Linguistics and Information Techniques. A Brief Introduction to Information System Design. Application of Simulation Techniques to Design and Management of Information Systems. Networks and Systems. Information Network Concepts. Use of Behavioral Data in Designing and Effecting Innovations in Scientific Communication. Actual and Potential Role of Universal Decimal Classi-

fication in Language-Sciences Documentation, Problems of Model Automatic Information System, Bases for Improved Information Systems, Integrated Bibliography Pilot Study, Bibliographical Center for Latin-American Linguistics, Network System for Language Information: Current Conditions and Long-Range Prospects, Summary, Index.

259 pages 1968 \$15.00

Statistics and Style

Edited by Lubomír Doležel

Institute for Czech Language, Prague,
Czechoslovakia

Richard W. Bailey

Department of English Language and Literature,
University of Michigan

Contains 17 essays by scholars in a wide variety of disciplines, all of whom illustrate the value of statistical methods in the analysis of literary texts. *Mathematical Linguistics and Automatic Language Processing*, 6.

Contents: The Theory of Statistical Stylistics. Vocabulary Measures. Sentence-Level Measures. Poetics. Individual styles. History.

368 pages approximately early 1969

A Functional Approach to Syntax:

A New Type of Generative Description of Language

By Peter Sgall, Ladislav Nebesky, Ala Goralčíková,
and Eva Jajičová

Charles University, Prague

Mathematical Linguistics and Automatic Language Processing, 7.

1969 in prep.

Machine Intelligence, 1

Edited by N. L. Collins and Donald Michie

Department of Machine Intelligence and Perception
University of Edinburgh

Proceedings of the first annual symposium, Machine Information Workshop, held at the Experimental Programming Unit, Edinburgh University, 1965. Emphasizes accounts of research producing results.

Contents: Preface. Abstract Foundations. Theorem Proving. Machine Learning and Heuristic Programming. Cognitive Processes: Methods and Models. Pattern Recognition. Problem-Oriented Languages.

286 pages 1967 \$12.50

Machine Intelligence, 2

Edited by Ella Dale and Donald Michie

Department of Machine Intelligence and Perception
University of Edinburgh

Proceedings of the second annual Machine Intelligence workshop held in Edinburgh. Covers recent advances ranging from fundamental questions concerning the meaning and efficiency of computer programs through the design of robot constants for the mathematician.

Contents: Preface. Introduction. Abstract Foundations. Mechanised Mathematics. Machine Learning and Heuristic Programming. Cognitive Processes: Methods and Models. Problem Oriented Languages. Subject, Author Indices.

261 pages 1967 \$13.75

Machine Intelligence, 3

Edited by D. Michie

Department of Machine Intelligence and Perception
University of Edinburgh

The annual Machine Intelligence Workshop in Edinburgh is rapidly earning a reputation as an international conference wherein hard results are hammered out and reported on in the fast-changing interdisciplinary field of computer science. This volume gives many of the papers on a wide range of subjects covered at the third annual workshop held in 1967.

Contents: Mathematical Foundations (4 papers); Theorem Proving (5 papers); Machine Learning and Heuristic Programming (5 papers); Man-Machine Interaction (3 papers); Cognitive Processes: Methods and Models (2 papers); Pattern Recognition (1 paper); Problem-Oriented Languages (4 papers).

414 pages 1968 \$11.50

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List Processing

By J. M. Foster

Dept. of Engineering, Aberdeen University

Describes the techniques of list processing used in the writing of computer programs operating on complex data. Gives the general principles involved and the sort of work for which it is useful. *Computer Monograph Series.*

Contents: Introduction. The Representation of Lists. Operations on Lists. More Advanced Features. An Example of List Processing. Garbage Collection. Some Typical List Languages. The Future of List Processing. References.

60 pages 1967 \$4.50

A Comparative Study of Programming Languages

By Bryan Higman

Computer Science, University of London, England

This book is an introduction to a new subject—programming linguistics. *Computer Monograph Series.*

Contents: Introduction. The Nature of Language in General. Recursion. Polish Notation. Theory of Names. Systems Aspects. Formal Language Structure. Micro-generator. From Machine Code to Fortran. Cobol. Algol. List Processing Languages. C.P.L. and the I.B.M. Share Issue. Input and Output. Miscellaneous Topics. Bibliography. Index.

172 pages 1967 \$8.50

Basic Machine Principles

By J. K. Iliffe

Deals with the definition of a computer system from the programming point of view. The machine definition is presented in terms of a symbolic language whose fundamental origins are reflected in the name "Basic Language." The hard and fast practical requirements are embodied in the Basic Machine. The language itself is realized by an integrated system of stored programs and logic which together constitute the Basic Language Machine or BLM. *Computer Monograph Series.*

Contents: General Principles. Some Related Systems. Basic Machine. Basic Language. Techniques.

96 pages 1968 \$5.25

Recursive Techniques in Programming

By D. W. Barron

This monograph shows how recursion can be used to advantage in some situations and clarifies the relationship between recursion and the more familiar iterative techniques of programming. It also shows how recursive techniques affect the software and hardware of a computing system. *Computer Monograph Series.*

Contents: The Ideas of Recursion. Examples and Applications. Mechanisms for Recursion. Recursion and Iteration. List Processing.

72 pages 1968 \$5.25

Time-Sharing Computer Systems

By M. V. Wilkes

Computer Technology, University Mathematical Laboratory, Cambridge, England

Presents a user's view of time-sharing systems and describes from various angles how such systems are designed. Time-sharing enables many individuals remote from a big computer to use it simultaneously, each one acting as though he had the computer to himself. *Computer Monograph Series.*

Contents: Introduction. A User's View of Time-Sharing. Early Systems and General Principles. Design of a System. Satellite Computers and Graphical Displays. Filing Systems. Operational and Managerial Aspects of Time-Sharing.

110 pages, 10 figures. 1968 \$4.95

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